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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,469	07/20/2000	Du-seop Yoon	1293.1132/MDS	3077

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 12/03/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

VB

Office Action Summary	Application No.	Applicant(s)	
	09/620,469	YOON ET AL.	
	Examiner	Art Unit	
	Martin J Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6,8-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,9-11 and 13-21 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The response of the applicant has been read and given careful consideration. Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,2,9-11 and 14-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Miyauchi et al. JP 09-007224.

See figure 1 and description on page 10. The examiner notes that the third recording layer cannot be recorded in without recording in the others and the second recording layer cannot be written in without recording in the first. The different compositions allow this to function in a manner embraced by the claims.

The rejection stands for the reason immediately above. A machine translation to support the examiner's position is also provided. (note GeTeSb recording layer). The examiner notes that

the reference specifically indicates that the different recording layers are written using different intensities. This is different from the other references discussed in the previous office action.

The applicant argues as if the medium of the reference erases the previously recorded information during replay/reading. Nothing of the sort occurs and the information in each of the layers is stable to the intensity of the reading beam. The applicant also asserted that the disclosed **phase change** recording layers do not undergo phase change when the second or third layer is recorded in. This ignores the fact stated in the reference, that the second or third **phase change** recording layers cannot be recorded without recording information in the first **phase change** recording layer. Therefore the phase change must occur. If the laser passes through the irradiated bit area of the first recording layer to reach the bit area of the second or third recording layers, then the phase is changed relative to the surrounding area as the optical thickness has changed due to the change in the refractive index. This change in optical thickness induces a change in the phase of the reading light passing through the bit areas relative to the phase of the reading light passing through the non-bit areas, but does not change the crystalline/physical state of the first phase change recording layer. Therefore the argument offered by the applicant is flawed. The examiner also wishes to point out the use of the GeTeSb recording layers, which are also recited in the claim. This further undercuts the arguments of the applicant as the material is described by the applicant as functioning in a particular manner and coverage is sought for that embodiment. The rejection stands.

5 Claims 1-3,6,9-11 and 14-21 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Ichihara et al. '650.

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The second embodiment describes a grooved substrate, coated with a SiO₂ dielectric layer, a GeSbTe+Sb superresolution layer, a ZnS-SiO₂ dielectric layer, a Ge₂Te₅Sb₂ recording layer, a ZnS-SiO₂ dielectric layer and a reflective Al film. This super resolution film has a relatively long crystallization time. When reproduction is performed, the atoms of the super-resolution film are rearranged so that an optical aperture is formed which is smaller than the beam spot. (12/1-27). The use of photon-mode or heat mode to form the aperture in the super-resolution film is disclosed. (4/20-35) The formation of an elliptical aperture using heat mode and a circular aperture in the photon mode is disclosed. (5/6-19). The use of various materials for the super-resolution layer is disclosed. (14/21-29

The examiner notes that the materials are those disclosed in the instant specification and recited in the claims. The prior art description of their function is the same as that appearing on page 9 at lines 1-8.

The applicant's arguments ignore the composition as discussed above and the described effect of the super-resolution layer. Specifically, the use of photon-mode to effectively form the aperture in the super-resolution film. (4/20-35). The formation of the aperture using the **GeTeSb phase change material** reduces the size of the laser beam able to impinge on the recording layer to less than that incident upon the super-resolution film. The rejection stands.

6 Claims 1-3,5,6,9-11 and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Miyauchi et al. JP 09-007224 or Ichihara et al. '650, in view of Yamada et al. '260 and Kikukawa et al. '036.

Yamada et al. '260 teaches phase change recording media including InSbTe and GeSbTe (9/14-42) . Useful reflective layer materials include Ni, Al, Au and Cu. (10/6-10). Useful dielectric layers are also disclosed. (9/54-61).

Kikukawa et al. '036 discloses that mask materials include alloys of Sb with metals such as Te, Ge and In. (8/40-44)

It would have been obvious to use other phase change materials, such as InSbTe heavy in Sb, in place of the GeSbTe+Sb in the super resolution layer or lower recording layer of Miyauchi et al. JP 09-007224 or Ichihara et al. '650 with a reasonable expectation of achieving comparable results based upon the disclosure of equivalent function in Yamada et al. '260 and the teachings of the use of Sb alloys in super resolution layers by Kikukawa et al. '036.

The rejection stands for the reasons above without further comment as no additional arguments were directed at this rejection.

7 Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

There is no indication in the prior art, that Ni can act in the manner described and the prior rejections of this claim are withdrawn.

8 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

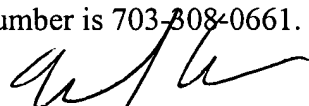
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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 703-308-4397. The examiner can normally be reached on Mondays-Thursday and alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9309.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Martin J Angebranndt
Primary Examiner
Art Unit 1756

December 1, 2003